WE CLAIM:

Sub A1

1. Power transmitting apparatus comprising a fluid coupling including at least one housing having an axis of rotation and connectable with a rotary output device, at least one impeller disposed in and driven by said at least one housing, and at least one runner disposed in said at least one housing and connectable with a rotary input device; and damper means including at least one torsionally elastic damper including means for transmitting power between said at least one housing and the input device, said power transmitting means including at least one energy storing element acting in a circumferential direction of said at least one impeller intermediate said at least one runner and said input device and being spaced apart from and disposed radially outwardly of said axis.

2. The apparatus of claim 1, wherein said fluid coupling further includes at least one guide wheel between said at least one impeller and said at least one runner.

3. The apparatus of claim 1, wherein said fluid coupling is a Föttinger coupling.

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4. The apparatus of claim 1, wherein said fluid coupling is a hydrodynamic torque converter.

5. The apparatus of claim 1, wherein said driving ~~output~~ device includes an output element of an engine.

6. The apparatus of claim 1, wherein said driven ~~input~~ device includes an input element of a transmission.

7. The apparatus of claim 1, wherein said at least one housing includes a wall adjacent the driving ~~output~~ device and said power transmitting means is disposed, at least in part, between said wall and said at least one runner as seen in the direction of said axis.

8. The apparatus of claim 1, wherein at least a portion of said damper means is disposed between a wall of said at least one housing and said at least one runner as seen in the direction of said axis, said wall being adjacent said ~~output~~ driving device and said portion of said damper means including said at least one energy storing element.

9. The apparatus of claim 1, wherein said damper means has a spring gradient of 2 to 20 Nm/°.

10. The apparatus of claim 9, wherein said spring gradient is between 5 and 15 Nm/°.

11. The apparatus of claim 1, wherein said at least one energy storing element extends circumferentially of said at least one housing along an arc of 75 to 175°.

12. The apparatus of claim 11, wherein said power transmitting means includes a plurality of energy storing elements each extending along an arc of 75 to 175°.

13. The apparatus of claim 1, wherein said at least one energy storing element is a preformed arcuate spring having a predetermined curvature.

14. The apparatus of claim 13, wherein said spring is a coil spring which has a predetermined radius of curvature prior to insertion between said at least one runner and said ~~input~~ driven device, said radius being at least substantially unchanged as a result of and upon completed insertion thereof.

15. The apparatus of claim 1, wherein said at least one energy storing element has a radially outer portion remotest from said axis and further comprising wear reducing means adjacent at least said radially outer portion of said at least one energy storing element.

16. The apparatus of claim 15, wherein at least a part of said radially outer portion abuts said wear reducing means in response to rotation of said housing.

17. The apparatus of claim 15, wherein said wear reducing means includes at least one separately produced component in said housing.

18. The apparatus of claim 1, wherein said at least one damper includes a carrier for said at least one energy storing element, said carrier including a confining portion radially outwardly adjacent said at least one energy storing element and said carrier being rotatable with said at least one runner.

19. The apparatus of claim 18, further comprising means for non-rotatably connecting said carrier to said at least one runner.

20. The apparatus of claim 18, wherein said carrier further comprises a second portion disposed radially inwardly of said confining portion and non-rotatably associated with said at least one runner.

21. The apparatus of claim 18, wherein said at least one runner has a radially outer portion non-rotatably associated with said confining portion of said carrier.

22. The apparatus of claim 1, wherein said at least one damper includes an output member and further comprising an output element arranged to transmit torque to said ~~input~~ driven device and being at least indirectly non-rotatably connected with said output member.

23. The apparatus of claim 22, wherein said damper means further comprises a second damper disposed radially outwardly of said at least one damper and having an output member arranged to transmit torque to said at least one damper, and further comprising an output element non-rotatably connected with an output member of said at lest one damper.

24. The apparatus of claim 1, further comprising means for at least indirectly connecting said at least one runner with said power transmitting means, said connecting means including a welded joint.

SUB C2 25. The apparatus of claim 1, further comprising a bypass clutch in series with said at least one damper.

26. The apparatus of claim 25, wherein said bypass clutch includes an output component non-rotatably connected with an input member of said at least one damper.

27. The apparatus of claim 26, wherein said output component is movable in the direction of said axis.

28. The apparatus of claim 26, wherein said output component is movable relative to said input member in the direction of said axis.

29. The apparatus of claim 1, further comprising a bypass clutch in series with said damper means, said bypass clutch having a friction surface disposed at a first radial distance from said axis and said damper means being disposed at a second radial distance from said axis, said second distance at least approximating said first distance.

30. The apparatus of claim 1, further comprising a bypass clutch in series with said damper means, said clutch having an output component disposed between said at least one damper and a wall of said at least one housing, as seen in the direction of said axis, said wall being adjacent said ~~output~~ driving device.

31. The apparatus of claim 1, further comprising a bypass clutch in series with said at least one damper, said clutch including a rotary output component and said component comprising a reciprocable piston.

32. The apparatus of claim 31, wherein said component is movable in the direction of and about said axis, said component including a portion sealingly engaging a portion of said ~~input~~ driving device.

33. The apparatus of claim 31, wherein said component is movable in the direction of and about said axis, and further comprising means for form-lockingly connecting said component with an input member of said at least one damper so that said input member shares the rotary movements of said component.

34. The apparatus of claim 33, wherein said connecting means includes mating teeth provided on said component and said input member and extending substantially radially of said axis.

35. The apparatus of claim 31, wherein said component is movable in the direction of and about said axis and further comprising means for non-rotatably connecting said component with an input member of said at least one damper so that said input member shares the rotary movements of said component, said connecting means comprising at least one leaf spring.

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36. Power transmitting apparatus comprising a fluid coupling including at least one housing having an axis of rotation and connectable with a rotary ~~output~~ driving device, at least one impeller disposed in and driven by said at least one housing, and at least one runner disposed in said at least one housing and connectable with a rotary ~~input~~ driven device; an output element; at least one torsionally elastic damper in a power train between said at least one housing and said output element, said at least one damper including at least one energy storing element acting in a circumferential direction of said at least one housing, said at least one energy storing element being disposed radially outwardly of said axis between said at least one runner and said output element; and means for stressing said at least one damper, said stressing means being connected with said runner for joint movement about and along said axis and said runner being movable relative to said output element in the direction of said axis.

37. The apparatus of claim 36, wherein said fluid coupling further comprises at least one guide wheel between said at least one impeller and said at least one runner.

38. The apparatus of claim 36, further comprising means for at least indirectly mounting said stressing means on said output element.

39. The apparatus of claim 38, wherein said means for at least indirectly mounting comprises an intermediate member surrounding at least a portion of a hub of said output element.

40. The apparatus of claim 39, wherein said intermediate member includes means for limiting the extent of movability of said at least one runner in at least one direction axially of said at least one housing.

41. The apparatus of claim 38, wherein said means for indirectly mounting contains a plastic material.

42. The apparatus of claim 36, further comprising a carrier connecting said stressing means with said at least one runner, said carrier having a substantially L-shaped cross-sectional outline and overlying said stressing means in the direction of said axis.

43. The apparatus of claim 42, further comprising means for securing said carrier to said at least one runner.

44. The apparatus of claim 43, wherein said securing means comprises a welded joint.

45. The apparatus of claim 42, wherein said carrier constitutes an output component of a bypass clutch.

46. The apparatus of claim 45, wherein said clutch is in series with said at least one damper.

47. The apparatus of claim 42, wherein said carrier is provided with at least one friction lining.

48. Power transmitting apparatus comprising a fluid coupling including at least one housing having an axis of rotation and connectable with a rotary output device, at least one impeller disposed in and driven by said at least one housing, and at least one runner disposed in said at least one housing and connectable with a rotary input device; a rotary output element; and damper means including at least two torsionally elastic dampers in a power train between said at least one housing and said output element, each of said at least two dampers including at least one energy storing element acting in a circumferential direction of said at least one housing, the at least one energy storing element of one of said at least two dampers being disposed in a power train between said at least one runner and said output element and the at least one energy storing element of the other of said at least two dampers being disposed in a power train between said at least one housing and said at least one runner.

49. The apparatus of claim 48, wherein said fluid coupling includes a Föttinger coupling.

50. The apparatus of claim 48, wherein said fluid coupling comprises a hydrodynamic torque converter.

51. The apparatus of claim 48, wherein said fluid coupling further comprises at least one guide wheel between said at least one impeller and said at least one runner.

52. The apparatus of claim 48, wherein said at least one energy storing element of said other damper is disposed at a first radial distance from said axis and said at least one energy storing element of said one damper is disposed at a lesser second radial distance from said axis.

53. The apparatus of claim 48, further comprising a bypass clutch having at least one friction surface disposed between the energy storing elements of said one and said other damper, as seen radially of said axis.

54. The apparatus of claim 53, wherein said other damper has an output member and said one damper has an input member, said clutch connecting said output member with said input member.

55. The apparatus of claim 48, wherein said one damper further includes a first input member and said other damper further includes a second input member, one of said input members forming part of said at least one runner and the other of said input members forming part of said at least one housing.

56. The apparatus of claim 55, wherein said first input member forms part of said runner.

57. The apparatus of claim 48, further comprising means for non-rotatably connecting an output member of one of said dampers with said output element.

58. The apparatus of claim 48, wherein said output element comprises means for centering said at least one runner.

59. The apparatus of claim 48, further comprising a bypass clutch including a reciprocable plunger, said output element including means for centering said plunger.

60. The apparatus of claim 59, wherein said plunger is substantially disc-shaped.

61. The apparatus of claim 59, wherein said centering means comprises a sleeve-like portion at least partially surrounding said output element and further comprising at least one seal between a radially inner portion of said plunger and said sleeve-like portion.

62. The apparatus of claim 61, wherein said plunger is substantially disc-shaped and said radially inner portion includes a sleeve surrounding the sleeve-like portion of said centering means, said at least one seal including at least one O-ring between said sleeve and said sleeve-like portion.

63. The apparatus of claim 48, wherein said one damper includes a first output member and said other damper includes a second output member, one of said output members being centered by and being movable relative to the other of said output members in the direction of said axis.

64. The apparatus of claim 63, wherein said one output member is said second output member.

65. The apparatus of claim 48, further comprising a bypass clutch including a substantially disc-shaped plunger non-rotatably connected with an input member of one of said dampers.

66. The apparatus of claim 48, further comprising a bypass clutch having a substantially disc-shaped plunger and means for non-rotatably connecting said plunger with an input member of said one damper.

67. The apparatus of claim 48, further comprising a bypass clutch and means for centering a substantially disc-shaped plunger of said clutch on said output element, said centering means being non-rotatably connected with said plunger.

68. The apparatus of claim 48, further comprising a bypass clutch having a plunger, means for centering said plunger on said output element, and means for connecting said plunger with play for rotation with said centering means.